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Patent claims

1. A radial piston pump (1) for high-pressure fuel generation in fuel injection systems of internal combustion engines, in particular in a common rail injection system, having a drive shaft (4) which is mounted in a pump casing (2) and has an eccentric shaft section (6) on which a running roller (8) is mounted, and having preferably a plurality of pistons (16), which are arranged in a respective cylinder (14) radially with respect to the drive shaft (4) and each have a piston footplate (18), which makes contact with the circumferential surface (10, 12) of the running roller (8), at their ends facing the running roller (8), characterized in that at least that surface (28, 31) of the piston footplate (18) which is in contact with the circumferential surface (10, 12) of the running roller (8) consists of a wear-resistant material, namely of hard metal, a ceramic material, a cast carbide material or cermet, and/or in that at least part of the running roller (8), in particular at least part of the circumferential surface (10, 12) of the running roller (8), consists of a wear-resistant material, namely of hard metal, a precision-cast material, a cast carbide material, a sintered tool steel or an alloyed nitriding steel, and/or in that the piston (16) consists of a ceramic material.

2. The radial piston pump as claimed in claim 1, characterized in that the running roller (8), on its circumferential surface (10, 12), and/or the piston footplate (18), on its surface (31) facing the running roller (8), has at least one insert (30, 32) made from the respective wear-resistant material.

3. The radial piston pump as claimed in claim 1 or 2, characterized in that the running roller (8) consists

of a heat-treated steel and has inserts (32) made from hard metal, such as G20, GC37 or GC20, and in that the piston foot disk (18) consists of ceramic, such as Si_3N_4 ceramic, of chilled cast iron, such as SoGGH, or of cermet, or has inserts (30) made from the above-mentioned materials.

4. The radial piston pump as claimed in claim 1 or 2, characterized in that the running roller (8) consists of a precision-cast material, such as GX-210WCr13 H, and in that the piston foot disk (18) consists of ceramic, such as Si_3N_4 ceramic, of hard metal, such as G20, or of cermet, or has inserts (30) made from the abovementioned materials.

5. The radial piston pump as claimed in claim 1 or 2, characterized in that the running roller (8) consists of a cast carbide material, such as chilled cast iron SoGGH, and in that the piston foot disk (18) consists of ceramic, such as Si_3N_4 ceramic, of hard metal, such as G20, or of cermet, or has inserts (30) made from the abovementioned materials.

6. The radial piston pump as claimed in claim 1 or 2, characterized in that the running roller (8) consists of sintered tool steel, such as ASP23, or of an alloyed nitriding steel, and in that the piston foot disk (18) consists of ceramic, such as Si_3N_4 ceramic, of hard metal, such as G20, of cermet or of a cast carbide material, such as SoGGH, or has inserts (30) made from the abovementioned materials.

7. The radial piston pump as claimed in claim 6, characterized in that the alloyed nitriding steel contains C and/or Cr and/or V and/or Mo, is gas-nitrided and does not have a compound layer in the region of contact with the piston footplate (18).

8. The radial piston pump as claimed in at least one of the preceding claims, characterized in that the running roller (8), on its circumferential surface (12), has at least one transverse groove (36) extending transversely to the direction of movement.

9. The radial piston pump as claimed in at least one of the preceding claims, characterized in that the piston footplate (18) has at least two grooves (50) which cross one another on its surface (31) facing the running roller (8).

10. The radial piston pump as claimed in at least one of the preceding claims, characterized in that the surface of the piston footplate (18) and/or of the running roller (8) has a surface roughness R_z of between 0.15 μm and 2 μm.

11. The radial piston pump as claimed in at least one of the preceding claims, characterized in that the piston consists of an Si_3N_4 ceramic or a ZrO_2 ceramic.

12. The radial piston pump as claimed in claim 11, characterized in that the piston (16) is produced by extrusion and has a porosity of less than 5%, the surface being infiltrated with MoS_2.

13. The radial piston pump as claimed in claim 12, characterized in that the piston (16) is isostatically extruded and sintered.